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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,384	07/27/2000	Lester F. Ludwig	COLB-002/01US	2926

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EXAMINER	
SELLERS, DANIEL R	

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/601,384	LUDWIG, LESTER F.	
	Examiner	Art Unit	
	Daniel R. Sellers	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,5-7,57,63 and 67-79* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,3,5-7,57,63 and 67-79* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. **Claims 2, 3, 5-7, 57, 63, and 67-79** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ludwig et al. (WO 95/10158) in view of Cezanne et al. (USPN 5,473,701) and Andrea et al. (USPN 5,251,263) (hereinafter Ludwig, Cezanne, and Andrea, respectively).

3. Regarding **claim 2**, Ludwig teaches a device for use in association with a multimedia system for capturing and reproducing at least audio signals (p. 3, lines 24-27), the device being:

A) associated with a plurality of microphones (p. 19, line 24 - p. 20, line 12, teaches at least three inputs via 802, 807, or 808);

B) configured to perform adaptive acoustic stereo echo-canceling operations on audio signals captured by at least some of the associated microphones to produce at least one stereo echo-canceling audio signal (p. 20, lines 13-19, teaches a stereo echo-canceling function when the input is routed from A-IN port (802) to the EQ (815) then the echo-canceller (814) and stereo audio is used in teleconferencing);

C) configured to perform synthetic aperture microphone processing on the audio signals captured by at least some of the associated microphones for producing at least one synthetic aperture microphone audio signal (Ludwig does not appear to teach this); and

D) configured to select between the adaptive acoustic stereo echo-canceling operations and the synthetic aperture microphone processing (Fig. 19, units 802, 804, 807, 808, and 811-815 teaches that the echo-canceling operations are bypassed when using the I/O ports 807 and 808).

Therefore, Ludwig teaches a device with parts A, B, and D, but does not teach part C, the synthetic aperture microphone processing. Cezanne teaches synthetic aperture microphone processing (see Abstract, where synthetic aperture microphone processing is taught by a microphone array with adaptive sensitivity to a given direction, and this process can also be referred to as beamforming).

Specifically, Cezanne teaches a technique for adaptively adjusting the directivity of a microphone array to reduce background noise in a device used for video teleconferencing systems and multimedia computer communication systems (Col. 1, lines 10-27 and 43-46). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Ludwig and Cezanne for the purpose of reducing background noise. The combination of Ludwig and Cezanne teaches a system that could have been used together in teleconferencing systems and multimedia computer communication systems, however the system of Ludwig appears to bypass the echo-canceling system only when the handset or headset input is used. Cezanne does not positively recite a handset or a headset.

Andrea teaches a telephone handset with adaptive noise cancellation for use in noisy environments (Col. 1, lines 7-12 and Fig. 8-11 and 15-17). Andrea teaches several different embodiments of handsets (Col. 14, lines 30-63 and Fig. 8-11), and

teaches that a system like Cezanne could be used to further reduce noise (Col. 15, line 16 - Col. 16, line 7). It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of Ludwig, Cezanne, and Andrea for the purpose of further reducing sidelobe noises.

4. Regarding **claim 3**, the further limitation of claim 2, see the preceding argument with respect to claim 2. It would have been obvious for one of ordinary skill in the art at the time of the invention to construct a single package containing the stereo echo-canceling operations and the synthetic aperture microphone processing capabilities as taught by the combination of Ludwig, Cezanne, and Andrea. Both Ludwig and Andrea teach an external I/O box (see Ludwig, Fig. 19 and Andrea, Fig. 11 and 17), and it would have been obvious to combine like features in one package.

5. Regarding **claim 5**, the further limitation of claim 2, see the preceding argument with respect to claim 2. In the combination, Cezanne teaches this feature of directional sensitivity.

6. Regarding **claim 6**, the further limitation of claim 2, see the preceding argument with respect to claim 2. In the combination, Cezanne teaches at least a delay operation on the signal (Fig. 3, unit 30 and 35).

7. Regarding **claim 7**, the further limitation of claim 2, see the preceding argument with respect to claim 2. In the combination, Ludwig teaches A/V elements configured to receive, transmit, encode, and decode audio and video signals (p. 9, lines 30-35).

8. Regarding **claim 57**, the further limitation of claim 2, see the preceding argument with respect to claim 2. In the combination, Ludwig teaches a port configured to couple

the device to a workstation (Fig. 19, units 802, 804, 805, 807, and 808).

9. Regarding **claim 63**, the further limitation of claim 2, see the preceding argument with respect to claim 2. The combination of Ludwig, Cezanne, and Andrea could also have been realized using just the microphone array (Andrea, Fig. 16) and by connecting it through the A-IN port 802 (Ludwig, Fig. 19).

10. Regarding **claim 67**, the further limitation of claim 2, see the preceding argument with respect to claim 2. In the combination, Ludwig teaches standard echo-canceling circuitry (Fig. 19, unit 814 and p. 20, lines 1-6), Cezanne teaches digital signal processing hardware (Col. 4, lines 28-35), and Andrea teaches the use of a digital signal processor capable of all digital processing functions (Col. 5, lines 50-55). It would have been obvious for one of ordinary skill in the art at the time of the invention to perform all the functions in a single processor to save costs.

11. Regarding **claim 68**, see the preceding argument with respect to claim 2. The combination of Ludwig, Cezanne, and Andrea teaches a method with these features.

12. Regarding **claim 69**, the further limitation of claim 68, see the preceding argument with respect to claim 67. The combination teaches these features.

13. Regarding **claim 70**, the further limitation of claim 68, see the preceding argument with respect to claim 63. The combination teaches these features.

14. Regarding **claim 71**, the further limitation of claim 68, see the preceding argument with respect to claim 5. The combination teaches these features.

15. Regarding **claim 72**, see the preceding argument with respect to claim 2. The combination of Ludwig, Cezanne, and Andrea teaches a method with these features.

16. Regarding **claim 73**, the further limitation of claim 72, see the preceding argument with respect to claim 3. The combination teaches these features.

17. Regarding **claim 74**, the further limitation of claim 72, see the preceding argument with respect to claim 67. The combination teaches these features.

18. Regarding **claim 75**, the further limitation of claim 72, see the preceding argument with respect to claim 63. The combination teaches these features.

19. Regarding **claim 76**, the further limitation of claim 72, see the preceding argument with respect to claim 5. The combination teaches these features.

20. Regarding **claim 77**, the further limitation of claim 72, see the preceding argument with respect to claim 6. The combination teaches these features.

21. Regarding **claim 78**, the further limitation of claim 72, see the preceding argument with respect to claim 7. The combination teaches these features.

22. Regarding **claim 79**, the further limitation of claim 72, see the preceding argument with respect to claim 57. The combination teaches these features.

Response to Arguments

23. Applicant's arguments with respect to claims 2, 3, 5-7, 57, 63, and 67-79 have been considered but are moot in view of the new ground(s) of rejection

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Matouk et al. (USPN 5,625,684) - teaches active noise suppression in a telephone handset (abstract); and

Mauney et al. (USPN 5,812,659) - teaches an earpiece with directional sensitivity towards user's mouth (abstract).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel R. Sellers whose telephone number is 571-272-7528. The examiner can normally be reached on Monday to Friday, 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571)272-7564. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SINH TRAN
SUPERVISORY PATENT EXAMINER

DRS